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FRANCE: NUCLEAR, MISSILE, AND SPACE DEVELOPMENTS

FOUO No. 460

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ESA PLANS TO LAUNCH TWO EARTH OBSERVATION SATELLITES

Paris LE MONDE in French 10 Apr 79 p 12

[Article by Maurice Arvonny: "Plans for Launch of Two Remote Sensing Satellites"]

[Text] Reinhold Steiner, 51, will become director of the European Space Operations Center (ESOC) in Darmstedt, FRG, this July. ESOC is responsible for tracking and controlling all satellites placed in orbit in behalf of the European Space Agency (ESA). Steiner is Swiss and a chemical engineer.

The council of the European Space Agency made no other important decisions during its 3-4 April meeting held in ESA headquarters. In particular, it could not reach agreement on the agency's 1979 budget. As happened last year when the budget was not regularized until late December, the agency is going to have to continue to "live" on monthly allocations. This month-by-month financing is scarcely conducive to sound management. This budgetary impasse is due to Italy's insistence that ESA modify its method of converting different national currencies into accounting units. This issue was discussed by the council and the International Monetary Fund has been asked to study the matter.

This budgetary problem does not completely stymie further progress in Europe's space effort. As a matter of fact, a new program is gradually getting underway, namely the remote sensing satellite program. In March, the ESA approved an outlay of some 9 million accounting units (50 million francs) for a 2-year preliminary study. Present plans call for the launching of two satellites, weighing 1.5 or 2 tons, in the mid-1980's.

These satellites will carry several types of devices. They will be equipped with a side-looking synthetic aperture radar (SAR) similar to the one designed for Spacelab. It will be able to "see" 30-meter objects through clouds. There will also be an optical observation system for both the visible spectrum and near infrared spectrum. Depending on the missions, it will cover a narrow field with a resolution similar to the SAR's resolution, or observe a much wider swath, but with less precision.

Special consideration is being given to two possible missions. The LASS (Land Applications Satellite System) would be used for detailed observation of soils. The COMSS (Coastal Ocean Monitoring Satellite System) would be used for surveillance of coastal ocean areas.

There is also another ESA ocean-related program, the maritime communications program. Eighteen representatives of the countries that will comprise Inmareat [International Maritime Satellite Organization] scheduled to be established this summer, met in late March. By a large majority, they agreed that the future system would consist of three Intelsat [International Telecommunications Satellite Organization] spacecraft equipped with repeaters specifically adapted to communications with ships, and three special Marecs satellites built by ESA.

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NEW DIRECTIONS OUTLINED FOR SPACE PROGRAM

Paris AIR & COSMOS in French 17 Mar 79 pp 40-42

[Article by Pierre Langereux: "France, Second Western Space Power"]

[Text] In its meeting of 7 March 1979, the Council of Ministers made important decisions concerning the direction of French space programs and the development of the national space industry, confirming the goals previously defined in the interministerial committee meetings of September 1977 and February 1978, in the Council of Ministers session of 26 July 1978 and in a closed session at the Elysee Palace on 20 February 1979.

The new space aims of the French government are especially ambitious. As Minister of Industry Andre Giraud said, it is a matter of France becoming the second Western space power--after the United States! Nothing less.

"The space effort by France over many years (1962) today enables it to apply studies and research to projects of a commercial nature," Andre Giraud said. "The Ariane launch vehicle, the 'Telecom 1' telecommunications satellite and the 'TDF 1' direct-TV satellite project are already evidence of this," the minister stated. As the communique from the Elysee Palace pointed out, this involves "moving from the construction of prototypes to a true French space industry organized to secure international markets and to create new high-skilled jobs."

In particular, the decision made in favor of the national telecommunications satellite and the possible decision concerning a direct-telecast satellite will have important consequences for the space and electronics industries. "The proficiency acquired by French industry and thus its export credibility should, by 1982, result in an export turnover which would extend the national effort and lead to a new growth of industrial activity," the minister of industry believes. "Space industry jobs resulting from these decisions could ultimately be estimated at employing 1,000 to 2,000 persons."

This "change" will obviously lead "to making important decisions with regard to programs and the need for significant structural modifications," the minister of industry recalled. He had already announced his intentions during his visit to the Toulouse Space Center several months ago.

Increased Powers of CNES Administrative Board

The minister of industry thus announced a four-point revision of CNES [National Center for Space Studies] structures: elimination of the Space Applications Board; modification of the composition and powers of the CNES Administrative Board; modification of CNES management structures and its relations with customers; modification of methods for informing supervising authorities.

Elimination of the Space Applications Board results in giving the CNES Administrative Board a more important role as "interministerial government advisor for space affairs," with which ministries concerned with space policy will communicate, and "broader powers," particularly "to examine any proposed orientation of French space policy." These changes will become effective after the Council of State examines the proposed decree approved by the Council of Ministers in its closed session of 20 February 1979. The new CNES Administrative Board will not include representatives appointed intuitu personae from various ministries, but rather directors directly concerned with space affairs through their duties, particularly as users. The minister of industry will nominate the chairman of the new Administrative Board and will be represented therein by the government commissioner (director of electronics and data-processing industries under the Ministry of Industry).

Three New CNES Directorates

This displacement of the center of gravity of French space activities, from research to industrial and commercial affairs, has caused CNES to "modify its structures and to establish new relations with its customers," in accordance with ministerial directives.

The supreme hierarchy is not affected by these new measures: Mr Hubert Curien remains CNES chairman and Mr Yves Sillard is still the general director, assisted by Mr Pierre Morel, assistant general director in charge of marketing research and scientific policy in general. Similarly, the decentralized technical centers--the Toulouse Space Center directed by Mr J.-C. Husson, the Guyanese Space Center directed by Mr A. Vienne and the Directorate of Launch Vehicles (Evry) headed by Mr F d'Allest--are not affected by the reorganization.

But the structures of the CNES headquarters in Paris have been regrouped into three directorates corresponding to the new centers of activity:

The Directorate of Industrial and International Affairs, assigned to Mr Jean-Gerard Roussel, will be in charge of formulating and monitoring the establishment's industrial policy and handling all international affairs, except for European Space Agency (ESA) matters which are too closely tied to CNES programs. This directorate must particularly promote French space achievements for export.

The Directorate of Programming and Planning, to be headed by Mr Jean-Marie Luton, will also be in charge of relations with French customers and with the ESA.

And the CNES General Secretariat, currently under the direction of Mr Roger Lesgards, retains its powers but will be combined with the newly created Office for Evaluation and Control of Project Costs. "Placed under the authority of the general secretary and also at the disposal of the director of programs and planning, this office will necessarily participate in formulating the costs of future projects and will have the necessary means and procedures to assure permanent control and monitoring of costs during the development of programs," the minister of industry stated.

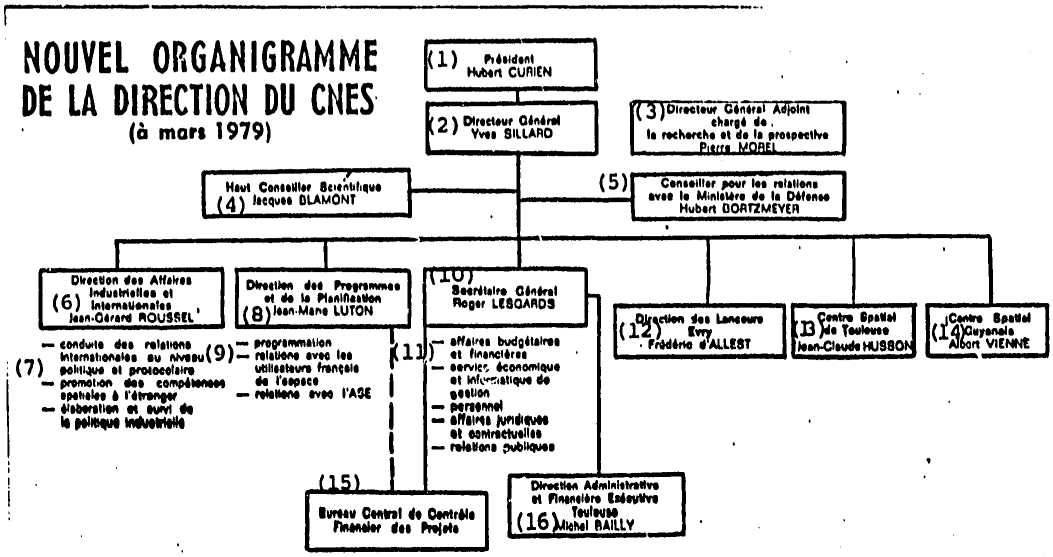
The main missions of the CNES are now the following: to encourage French industry to apply the practical knowledge and means acquired over 15 years, particularly in the case of international markets; to develop close relations with public French space customers (Ministry of Defense, PTT [Postal and Telecommunications Administration], TDF [expansion unknown], National Meteorological Service, civilian users of ground observation); intermediate-term planning of activities for rigorous financial management of programs; projection of long-term stakes and future space directions and suggesting to government authorities the means by which France will be able to participate; supporting basic research using space resources.

Establishment of "Transpace"

The minister of the interior recalled that the "Ariane" program is now entering its final stage: construction of the first launch vehicle will begin in April. The minister stated that the first flight remains scheduled for late 1979 (3 November 1979 in principle), concluding that "Ariane" is presently "a technically and financially well-managed program" which "is approaching the production and marketing stage."

In this connection, the minister of industry recalled that "the promotional arrangement set up in 1973 within the European Space Agency is reaching maturity at the end of the series of five initial rocket launchings. To prepare a production arrangement, the CNES and administrations have been working since July 1978 to define the framework of an industrial company for producing and marketing the 'Ariane' rocket and whose capital would be distributed among CNES and French and foreign companies."
Mr Giraud pointed out that the current proposals made by CNES in regard to this "Transpace" company to France's European partners have met with "a favorable reception."

Table 1. New Table of CNES Management (as of March 1979)



Key:

1. Chairman, Hubert Curien
2. General director, Yves Sillard
3. Assistant general director in charge of research and marketing, Pierre Morel
4. Top scientific advisor, Jacques Blamont
5. Advisor for relations with ministry of defense, Hubert Bortzmeyer
6. Directorate of industrial and international affairs, Jean-Gerard Roussel
7. International relations at political and protocol level; promotion of space achievements abroad; formulation and monitoring of industrial policy
8. Directorate of planning and programs, Jean-Marie Luton
9. Formulation of programs; relations with French space users; relations with ESA
10. General secretary, Roger Lesgards
11. Financial and budgetary affairs; management data processing and economic service; personnel; legal and contractual affairs; public relations
12. Evry Directorate of Launch Vehicles, Frederic d'Allest
13. Toulouse Space Center, Jean-Claude Husson
14. Guyanese Space Center, Albert Vienne
15. Central Office for Financial Control of Projects
16. Toulouse Executive Financial and Administrative Directorate, Michel Bailly

Improvement of "Ariane"

Continuation of the 'Ariane' launch vehicle program, the launching of heavy satellites (direct-TV) and the launching of light telecommunications satellites (Telecom 1) require that improvements be made in the launch vehicle, Mr Giraud stated. "Plans have therefore been made to start a program aimed at improving performance and reliability and reducing launching costs, by means of possible recovery of the first stage of the rocket."

The minister of industry will submit a report before next April on the application, cost and scheduling of this program.

It is planned that a 2.2-ton payload in a geostationary transfer orbit will be reached by November 1982 and a 2.3-ton payload by mid-1983, in order to take full advantage of the possibilities of double launchings of light satellites and to be able to launch heavy satellites. The cost of this project is estimated at approximately 360 million (1978 price) with a (15%) margin of risk.

Orbital Station and Minishuttle

It is also planned to continue this improvement of the European launch vehicle to achieve very superior performances--on the order of 7 tons in a low earth orbit by the middle of the next decade--in order to be able to launch future "heavy orbital stations" to be used for processing materials in space (CNES "Minos" project), as well as a "space transport vehicle," a kind of minishuttle with a crew for bringing back the products made in these space plants.

In order to achieve these ambitious missions, the "Ariane" rocket will have to undergo significant transformations, particularly including the addition of extra solid-fuel boosters and replacement of the present second stage by a new stage with cryogenic propulsion (like the present third stage).

New "Spot" and "Meteosat" Programs

"The program schedule of the French 'Spot' observation satellite provides for an initial launching in March 1984, corresponding to the beginning of the completion stage in May 1980," the minister of industry announced.

In addition, the minister recalled that a mission had been assigned to Mr Mayer, director of the National Geographic Institute (IGN), to prepare for coordination among satellite builders and future users with regard to supplying data collected.

The IGN director must submit his report to the minister this month. A structure for commercial development of the respective data will be proposed in this document.

The minister of industry has also said that "continuation of the European program of 'Meteosat' geostationary meteorological satellites requires more detailed talks with France's partners." These negotiations will be conducted by the minister of transportation--who supervises the National Meteorological Service, the French developer of "Meteosat."

A detailed report will be submitted to the government on 1 June regarding the advantage of the project and its modes of implementation, following an in-depth study to be conducted by the director of the National Meteorological Service. This consideration is related to the prospect of establishing a European Organization for Meteorological Services--Eumetsat--bringing together users wanting to use operational geostationary meteorological satellites of the "Meteosat" series, whose development and construction costs they would assume.

F 2.5 Billion in 1980 for Space

During the press conference on the results of the Council of Ministers meeting of 7 March, the minister of industry also announced that French space expenditures would reach F 2.4 to 2.5 billion in 1980, with approximately F 500 million for construction of the "Telecom 1" telecommunications satellites and approximately F 100 million for development of the "TDF 1" direct-TV satellites (if this project is approved in April); the remainder, approximately 1.9 to 2 billion, would cover other CNES activities for programs in progress and for the construction of the new "Spot" observation satellite (already approved).

In the event that these three new programs should be started at the same time--Spot, Telecom 1 and TDF 1--this would result in a space budget of approximately F 5 billion by 1983-84, the minister of industry said. Or twice the amount of French space credits in comparison to 1980 and three times the amount in comparison to this year. We should recall that CNES expenses in 1979 will amount to F 1.654 billion or 13.4 percent more in comparison to 1978 (F 1.459 billion). These expenditures are covered by a subsidy of F 1.415 billion in 1979 with F 239 million in outside revenue (see table).

The extent of resources, both material and financial, now being used from 1978 to 1980 by France in the "comprehensive" space sector--launch vehicles, observation, telecommunications, direct-TV and meteorological satellites, etc.--is almost dizzying. France's "comprehensive" offensive in the space sector is unprecedented. It unquestionably reflects a government drive, which manufacturers will not deny, to place France in a choice position among space nations of the next decade.

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TRICASTIN ENRICHMENT PLANT BEGINS OPERATING

Paris LE MONDE in French 15 Mar 79 p 37

[Article by Maurice Arvonny: "Enrichment Plant at Le Tricastin Has Begun Operations"]

[Text] The EURODIF [European Diffusion] Corporation, which is constructing a huge complex for the enrichment of uranium by gaseous diffusion at Le Tricastin in Drome, between Pierrelatte and Bollene, has just announced the beginning of industrial services in one section of the plant. By the end of the year it will be able to produce 2.6 million UTS [units of work, in terms of isotopic separation, which measures the cost of the enrichment operation] per year. The plant will be completed in 1982; it will by that time have a production capacity of 10.8 million UTS a year.

The decision to locate the plant at Le Tricastin was made in February 1974 by the EURODIF Corporation, formally established several months earlier from an economic interest group made up of Belgian, Spanish, French, Italian and Swedish corporations or organizations. Sweden subsequently withdrew, but Iran then joined the group, and the present distribution of EURODIF capital is as follows: SOBEN [Societe Belge pour l'enrichissement de l'uranium; Belgian Uranium Enrichment Corporation]: 11.1 percent; ENUSA [National Uranium Enterprise, Inc. (Spain)]: 11.1 percent; AGIP Nucleare [National Italian Oil Company]: 12.5 percent; CNEN [National Nuclear Energy Commission (Italy)]: 12.5 percent; COGEMA [Compagnie generale des matieres nucleaires; General Nuclear Materials Corporation]: 27.778 percent; SOFIDIF [Societe franco-iranienne pour l'enrichissement de l'uranium par diffusion gazeuse; Franco-Iranian Society for the Enrichment of Uranium by Gaseous Diffusion]: 25 percent. COGEMA is a 100-percent affiliate of the AEC [Atomic Energy Commission (France)], whereas SOFIDIF belongs 60 percent to the AEC and 40 percent to the Iranian Organization for Atomic Energy.

The Tricastin plant is made up of four units. The first handles 280 stages of separation and is already in service. The second, with 400 stages, is about to go into service. And two other, more extensive units will be operational by 1982. Each unit can independently produce quantities of uranium enriched at three or four percent of uranium-235, beginning with natural uranium (which contains 0.7 percent of uranium-235). But after the plant goes into full operation, there will be a different division of labor, with the larger units initiating the enrichment process and the smaller ones completing it, or else recycling the partially exhausted uranium.

The total cost of the plant should reach 15.3 billion francs by the time of its completion. But we must add another 7 billion for the construction of the nuclear power station being built by EDF [French Electric Power Company] in the immediate vicinity, which will include four reactors with 900-megawatt capacities. The Tricastin plant will call into play 3,000 megawatts, supplying power for the compresses which move the gas (hexafluoride of uranium) through the various stages of separation. This gas diffuses through a permeable membrane, and since the molecules containing uranium-235 have a rate of diffusion that is somewhat faster, the quantity of gas that passes through the membrane becomes very slightly enriched with uranium-235. Repeated thousands of times, this process ultimately results in a uranium sufficiently enriched to supply the power needed by the nuclear reactors.

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TRANSPACE COMPANY PROPOSED TO COMMERCIALIZE ARIANE

Paris AIR & COSMOS in French 17 Mar 79 p 42

[Article by Pierre Langereux]

[Text] The government's framework, well suited for research and development operations such as that of the new European "Ariane" launch vehicle, is no longer appropriate for carrying out the essentially industrial and commercial operations required for mass rocket production by the European aerospace industry.

Mr d'Allest, a CNES [National Center for Space Studies] official of the "Ariane" program, said that a new "structure," simultaneously providing for "quick decision-making, marketing power, financial autonomy, flexibility of operation and industrial commitment," is needed to sell "Ariane," not only in Europe but also abroad, in view of American competition with the NASA "Shuttle."

Mr Andre Giraud, minister of industry, said that this is what recently prompted the Ministry of Industry, other French ministries involved and the CNES, in charge of the "Ariane" program, "to define the framework of an industrial company for producing and marketing the 'Ariane' rocket and whose capital would be distributed among CNES and French and foreign companies."

The French government has therefore authorized the CNES to make proposals and negotiate with other European partners, governments and manufacturers with regard to establishing a new Transpace company to produce and market "Ariane" under a new agreement among the European Space Agency (ESA) and respective member nations.

With regard to technical management of the production program, this will be provided by the new company. On the other hand, responsibility for additional improvements and developments, designed to make the launch vehicle perform better in the future, will remain with CNES. Financial risks or benefits will be shared on a prorated basis according to capital investments. With regard to industrial organization, the arrangement set up for

production of the first mass-produced batch of launch vehicles would be retained, i.e., six first-level contractors--French and other European companies--subcontracting a percentage of their productions to various European businesses.

The sale of "Ariane" launch vehicles by Transpace would be carried out under the same terms as those applied by NASA for American rockets: users would pay the price of launching over a 3-year period. This procedure, in addition to the need to prefinance production of a launch vehicle (reimbursed by insurance companies in the event of an unsuccessful launching), will require borrowing to supplement the financing of stockholders (CNES and French and foreign manufacturers) of Transpace capital, which should be approximately F 200 million.

CNES has therefore been touring European capitals since February to officially present the proposed establishment of this "space transport company" and its structure. Decision-making process, legal framework, methods of financing, marketing structures, etc.

The Transpace company, Mr d'Allest explained, will have a "light structure suited" to its four main missions: prefinancing and managing the program for mass production of rockets; promoting and marketing the launch vehicle with potential customers; negotiating launching contracts with customers (suppliers of payloads); carrying out launchings in series for customers.

Despite this structural development, Mr d'Allest pointed out that "Ariane" would remain a European program, in accordance with the Space Agency's regulations, and that there would not be any changes in industrial organization.

Establishment of the Transpace company should be an opportunity to maintain European solidarity, recently demonstrated during Intelsat [International Telecommunications Satellite Consortium] negotiations with well-known success: despite the old habit of exclusively using American launch vehicles and despite the terrific competition of the "Shuttle" Intelsat decided to order an "Ariane" rocket (with an option for a second rocket) for launching "Intelsat 5" satellites beginning April 1981. The establishment of Transpace is necessary particularly to develop this breakthrough--which makes a hole in the American monopoly on rockets for the first time in 20 years.

Judging by the prospects of the model mission recently set up by ESA and CNES, "Ariane" will be the first rocket which Europe will actually mass produce: 40 to 50 rockets for operational launchings during the 1981-90 decade (cf. AIR & COSMOS No. 753).

Establishing the "Ariane" rocket in such a market, which represents a turnover of F 7 to 8 billion, will definitely require an aggressive marketing policy!

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END